2-21-94-F-130

SUMMARY
BIOLOGICAL OPINION FOR REPAIR OF FOREST ROAD 449A
TONTO NATIONAL FOREST, GILA COUNTY, ARIZONA

Date of the opinion: August 18, 1994

Action agency: U.S. Forest Service

Project: Repair of flood and erosion damage on Forest Road 449A along upper Campaign Creek

Listed species affected: Gila topminnow (Poeciliopsis occidentalis)

Biological opinion: non-jeopardy

Incidental take statement:

Anticipated take: Exceeding this level may require reinitiation of consultation. (page 8)

1. 20 dead fish of any species in or within 500 yards downstream of project activities
2. loss of all suitable habitat for 10 feet on either side of the ford crossing centerline, for a total of 120 linear feet of stream

Reasonable and prudent measures: Five objectives for minimizing, documenting, and mitigating incidental take are given. Implementation of these measures, through the terms and conditions, is mandatory. (page 9)

Terms and conditions: Terms and conditions implement the reasonable and prudent measures and are mandatory requirements. The terms and conditions include minimization of work in the wetted channel, measures to ensure pollutants do not enter surface waters, limitations on area of channel and vegetation modification and heavy equipment work, monitoring to detect dead or dying fish, submission of a written project report, and providing authorization and assistance in augmentation stocking. (pages 9 and 10)

Conservation recommendations: Implementation of conservation recommendations is discretionary. It is recommended that the Forest Service discuss with Peter "Bigfoot" Busnack the unauthorized road repair and dam construction conducted by Mr. Busnack and inform him of the possible violation of the Endangered Species Act and other statutes and regulations. (pages 10 and 11)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
ARIZONA ECOLOGICAL SERVICES STATE OFFICE
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August 18, 1994

In Reply Please Refer To:
AESO/TE
2-21-94-F-130

Charles W. Cartwright, Jr.
U.S. Forest Service
517 Gold Ave., SW.
Albuquerque, New Mexico 87102

Dear Mr. Cartwright:

This biological opinion responds to your request of February 8, 1994, for formal consultation pursuant to section 7 of the Endangered Species Act (Act) of 1973, as amended, on repair of Forest Road (FR) 449A (Campaign Road) in Gila County, Arizona. The species of concern is Gila topminnow (Poeciliopsis occidentalis). The 90-day consultation period began on February 11, 1994, the date your request was received in our office. At the request of the Fish and Wildlife Service (Service) the consultation was extended until July 26, 1994.

The following biological opinion is based on information provided in the December 13, 1993, biological evaluation (BE), an undated "comment copy" of the environmental assessment (EA), data in our files, a site visit of July 18, 1994, and other sources of information.

BIOLOGICAL OPINION

It is my biological opinion that repair of Forest Road 449A, as proposed, is not likely to jeopardize the continued existence of Gila topminnow.

BACKGROUND INFORMATION

Species Description

Gila topminnow was listed as an endangered species on March 11, 1967. No critical habitat has been designated for this species. Gila topminnow is a small, one to two-inch long,

livebearing fish of the family Poeciliidae (Minckley 1973). It occurs in the Gila, Sonora, and de la Concepcion River drainages in Arizona, New Mexico, and Sonora, Mexico (Minckley 1973, Vrijenhoek et al. 1985) but is listed only in the United States portion of its range. The species was once one of the most common fishes in the Gila River and its tributaries (Hubbs and Miller 1941). Destruction of its habitat through water diversion, stream downcutting, backwater draining, vegetation clearing, channelization, water impoundment, and other human uses of natural resources; plus competition with and/or predation by nonnative fish species, most notably mosquitofish (Gambusia affinis), have resulted in extirpation of Gila topminnow throughout most of its range (Meffe et al. 1983, USFWS 1984). At present, Gila topminnow is known from only 10 naturally occurring populations in the United States and about 20 reintroduced populations.

Campaign Creek and Upper Horrell Springs lie within the historic range of Gila topminnow and were stocked with Gila topminnow in 1983 as part of the recovery effort for that species (Brooks 1986). The Gila topminnow stock was from Boyce-Thompson Arboretum and is of mixed Monkey Spring, Cocio Wash, and Bylas Springs genetic lineage (Bagley et al. 1991). Stocking of Gila topminnow into Upper Horrell Springs was conducted under a Memorandum of Understanding (MOU) between the Service, the Forest Service, and Arizona Game and Fish Department (AGFD). Section 7 consultation on the MOU was concluded on May 13, 1982. A May 20, 1983, amendment added Upper Horrell Springs and Campaign Creek as sites to be stocked under that consultation.

Upper Horrell Springs are several small hillside seeps and two moderate-sized springs on the east side of Campaign Creek in T.2N., R.12E., SE 1/4 sec. 11, SW 1/4 sec. 12, and NE 1/4 sec. 14. Both moderate-sized springs have been modified with springboxes for domestic water supply to the Reevis Mountain School, a small private inholding on the creek. Upper Horrell Springs are the primary water source for the perennial portion of Campaign Creek although there is often some surface flow upstream from the springs. Campaign Creek is a small stream with a perennial section about 1 to 2 miles long in T.2N, R.12E., sections 1, 11, 12, and 14. It is tributary to the Salt River in Lake Roosevelt, although only flood flows reach the reservoir. Riparian vegetation includes Fremont cottonwood (Populus fremontii), Arizona sycamore (Platanus wrightii), willow (Salix sp.), walnut (Juglans major), hackberry (Celtis sp.), seep willow (Baccharis sp.), cattails (Typha sp.), grasses, sedges, and rushes. Vegetation density is higher on the ungrazed private Reevis School land than on Forest Service land. The stream is rocky with a high proportion of pools. The surrounding topography is relatively rugged and steep.

Fish recorded from Campaign Creek include longfin dace (Agosia chrysogaster), green sunfish (Lepomis cyanellus), and Gila topminnow. At the time of surveys identifying the site for Gila topminnow stocking, no fish were recorded from the drainage, and fish surveys in 1987 found no fish other than Gila topminnow (USFS unpublished data, Simons 1987). However, fish surveys in 1989 found longfin dace to be common (Bagley et al. 1991). Crayfish (Oronectes sp.) were also not recorded from Campaign Creek or Upper Horrell

Springs before 1989. Fish surveys in 1989 did not find crayfish, but Peter Busnack (also known as Peter Bigfoot), proprietor of the Reevis School, told surveyors that he had stocked Campaign Creek with crayfish and "minnows" (S. Stefferud 1989, Bagley et al. 1990). In 1991 and 1994, crayfish were reported as abundant (J. Stefferud 1991, S. Stefferud 1994).

There is one record (observation only) of green sunfish from Campaign Creek. This observation was made by biologist Marty Jakle of the Bureau of Reclamation in May 1990 (Jakle 1990).

Gila topminnow were stocked in Upper Horrell Springs in 1983 and were reported in Campaign Creek during surveys in 1985, 1987 (abundant), and 1989 (abundant) (Brooks 1986, Simons 1987, Bagley et al. 1990). No Gila topminnow have been observed or captured in Upper Horrell Springs/Campaign Creek since September 1989 (J. Stefferud 1989). Between September 1989 and April 1991, no fish sampling occurred in Campaign Creek or Upper Horrell Springs, so it is not possible to narrow the crash of the Gila topminnow population to a specific season or year.

According to Peter Bigfoot, in the summer of 1990 surface flow in Campaign Creek was reduced to short stretch near Upper Horrell Springs and the upper end of the Reevis School property (Busnack 1994). This event was followed by unusually cold winter temperatures in winter 1990-91, a moderate flood in spring of 1991, and major late winter flooding in the 1993. These natural fluctuations plus predation from the burgeoning crayfish population appear to have seriously depleted the Gila topminnow in Campaign Creek.

Although no Gila topminnow have been observed or captured in Campaign Creek since 1989, this population is still considered to be extant. When Gila topminnow populations are at low levels, currently available sampling methods have a high probability of not capturing the species. This is particularly true in moderate-sized complex habitats such as Upper Horrell Springs and Campaign Creek. Standards for determining whether a population is extirpated are being developed as part of the revision of the Gila topminnow recovery plan. Although these standards are not yet completed, they are expected to call for several years of negative sampling followed by an "extirpation report" that will be prepared, reviewed, and sent to interested parties when a Gila topminnow population is believed to be extirpated. During the five years since the Upper Horrell Springs and Campaign Creek Gila topminnow population was last found, three surveys have been conducted that likely meet criteria for adequacy in identifying Gila topminnow presence or absence. Two additional samplings have occurred that do not meet those criteria. Given the complexity of the habitat, the Service does not believe sufficient data exist to support a conclusion that the Gila topminnow population in Campaign Creek and Upper Horrell Springs has been extirpated.

Project Description

The proposed project is to repair the final 1.5 miles of FR 449A. Forest Road 449A is a 4-wheel drive road located in the Campaign Creek drainage on the Tonto Basin Ranger District of the Tonto National Forest in Gila County, Arizona (Figures 1 and 2). The road, as FR 449, ascends the drainage from an intersection with State Highway 88 for approximately 2 miles to the Cross P Ranch, a private inholding. From there, it continues up the drainage, as FR 449A, for about 6 miles to the Reevis Mountain School of Self Reliance, another private inholding. The road is in the streambed throughout several miles on the downstream end where the stream is intermittent/ephemeral. The road ascends the ridge on the east side of the stream to bypass a rock-bound box canyon. Above the canyon the road reenters the valley bottom, bordering the creek in the riparian zone, and crossing the creek frequently.

The last 1.5 miles of FR 449A were damaged during flooding in January 1993. This section of the road extends from the connection of FR 1476 (T.2N., R.12E., NE 1/4 sec. 1) to the Campaign Trailhead (T.2N., R.12E., SW 1/4 sec. 12) (Figure 1). The road runs along the perennial portion of the creek and crosses the stream six times in the 1.5 miles.

Repair would be conducted using a D-6 bulldozer and a small front end loader. The road would be bladed to smooth the surface and water bars would be installed. On the ford stream crossings, the channel banks would be sloped back and any large rocks in the channel or roadway would be removed. Excess sand and gravel would be hauled away from the stream.

The heavy equipment would cross the stream at the ford crossings, but when working would be outside of the wetted stream channel. No fuels or lubricants would be stored on site.

The proposed project as described in the BE and EA includes only immediate work as described above. However, a need for future additional repairs is anticipated. Therefore, as arranged by telephone with Tonto Basin Ranger District staff, this consultation has been expanded to cover repairs for the next five years (August 1994 to August 1999). Any Forest Service road repair work on FR 449A that falls within the above-described parameters within the next five years will be covered by this biological opinion. No additional consultation on road repair will be necessary until September 1999, unless proposed repair includes actions that are not part of those considered on in this opinion.

EFFECTS OF THE ACTION

Environmental Baseline

In 1989, the Campaign Creek represented one of the longest surviving Gila topminnow stocked populations. It is also one of a limited number of reintroduction sites where the habitat and water supply are natural and not human-created or modified. As such, it was considered a highly valuable habitat and population to the long-term survival and recovery of the species. The ensuing crash of the population in Campaign Creek raises doubts as to the value of this site. However, experience with recovery of Gila topminnow indicates that the habitat of Gila topminnow is so depleted that sites that sustain a stocked population for as long as Campaign Creek are valuable even if the population requires periodic augmentation. The natural life history of Gila topminnow is that of a short-lived, colonizing species which undergoes large fluctuations in numbers and may be pushed out of an area by natural events only to reinvade when conditions again become suitable. Natural functioning of this loss and reinvasion pattern is no longer possible due to the extirpation of the species throughout almost all of the Gila River basin and the alteration of most of the aquatic habitat of the basin. Survival and recovery for Gila topminnow may require that the fluctuating, loss/reinvasion life history be replaced by an artificial human-mediated stocking/augmentation program, particularly in isolated habitat fragments such as Campaign Creek.

For whatever reason, the Gila topminnow population in Campaign Creek is in serious condition. Although this may be a natural fluctuation from which the population will recover with no human assistance, it may also be a result of adverse impacts from resource uses of the watershed, introduction of predatory crayfish, or other human caused factors.

Livestock damage to streambanks and riparian vegetation and the consequent simplification of aquatic habitat is readily observed by the contrast between the grazed Forest Service lands along Campaign Creek and the ungrazed lands of the Reevis School. Service personnel have observed that recovery of the stream channel and riparian vegetation from the scouring floods of 1993 is occurring much more rapidly on the ungrazed Reevis property than on the grazed Forest Service lands. A new grazing system, instituted in 1991 following formal section 7 consultation, may result in improved conditions on Forest Service lands. However, recovery is expected to be slow because of the continued use of stream banks and channel by livestock. Cattle were present in the perennial portion of the stream channel during our July 18, 1994, site visit.

The existing road is a factor in the condition of the Campaign Creek stream channel. This is much more pronounced in the intermittent, lower portion of the drainage where the road is in the stream bottom proper for several miles. In the perennial stream area, road impacts come from the loss of riparian vegetation in the roadbed, the increased sediment from soil disturbance, the altered runoff characteristics due to vegetation loss and soil compaction,

and the direct alteration of the streambed itself at the six road crossings. Maintenance of this road over the past 50-100 years has likely resulted in temporary increases in those impacts.

This consultation is being conducted to assess the potential effects to Gila topminnow and their habitat from repair and maintenance of FR 449A road and its stream crossings in 1.5 miles of Campaign Creek by the Forest Service. However, during a site visit on July 18, 1994, Service staff found that the stream crossings have already been sloped back and large rocks moved out of the roadway. The size of the rocks moved indicate that this work was most likely conducted using machinery. At the first stream crossing in the perennial section (immediately after dropping off the hillside above the box canyon) a concrete and rock dam has been constructed on the downstream side of the crossing to provide a level surface for the road. This dam is approximately 4 feet high and 30 feet long. It is located on Forest Service land. Inscribed in the surface of the concrete is the following (some of the names were difficult to read and the spelling may not be correct):

"1993
Peter Bigfoot
Angelique Zolle
Myron Hardesty
Deborah Currier
Genie 'Tootie' Burke
Starfire"

Assuming the inscription refers to the date of construction and names of the builders of the dam, it appears that road work has been conducted on Forest Service land by private parties. Because this private repair work was not mentioned in the BE or EA, we assume the Forest Service is not aware of and did not authorize the work. We reported this apparently unauthorized road and stream modification to Forest Service staff, via telephone, on July 26, 1994. This private repair work is not in compliance with sections 7 or 9 of the Endangered Species Act, nor, we assume, with the National Environmental Policy Act or section 404 of the Clean Water Act. The impacts of the unauthorized repair work would be cumulative to the work proposed by the Forest Service.

Direct and Indirect Effects of the Proposed Action

The proposed repair of FR 449A is expected to have an adverse effect on Gila topminnow and their habitat. These adverse effects are expected to be relatively small.

Existing use of FR 449A is light. The need for 4-wheel drive is a deterrent to casual use. Estimates of use is 250 vehicle round-trips per year for trail access and 2 round-trips per week (104 per year) for the Reevis School for a total of 354 vehicles per year or 1 per day.

This limited use, along with the rocky nature of the valley bottom, has prevented serious erosion of the ford stream crossings.

The contribution of roads to the alteration and degradation of stream channels is recognized in the literature (Dobyns 1981, Furniss, et al. 1991). Adverse impacts to Campaign Creek from the existence of the road are generated by the loss of a 5-10 foot wide strip of riparian vegetation along a portion of the stream and by direct alteration of the streambank and substrate at the ford crossings. Loss of riparian vegetation reduces the stability of the streambanks and increases the erosion potential. Erosion from the exposed soil on the roadbed contributes to the sediment loading in Campaign Creek. However, excess sediment does not appear to be a significant factor in the aquatic habitat of the perennial portion of Campaign Creek and Gila topminnow are not particularly vulnerable to small increases in sedimentation. Repair and maintenance of the road is expected to alter impacts from the existing road only marginally.

The direct alteration of the stream bank and channel at the ford crossings adversely affects the Gila topminnow through reduction in bank stability and increased erosion. Neither of these effects is considered to be a significant problem in the perennial portion of Campaign Creek. The ford crossing alters the streambed by compaction, leveling, filling in of interstices, loss of cover, and destruction of aquatic invertebrates by crushing and displacement. In some cases, the leveling done to construct a ford crossing may result in an impassable barrier to upstream fish movement. This is exemplified by the unauthorized concrete and rock dam built to level the first stream crossing above the box canyon. The presence of six ford crossings within 1 mile is a significant alteration of the stream channel. Repair and maintenance of these crossings is expected to contribute sediment to Campaign Creek and to further alter the stream channel.

Operation of heavy machinery in a stream channel always carries some risk of accidental introduction of toxic substances, such as petroleum products, into the water. Because of the limited amount of heavy machinery work in the water during the proposed road repair, we believe the risk to Gila topminnow from such accidental pollution is very small.

Cumulative Effects of the Proposed Action

Cumulative effects are those effects of future non-Federal (State, local government, or private) activities on endangered or threatened species or critical habitat that are reasonably certain to occur during the course of the Federal activity subject to consultation. Future Federal actions are subject to the consultation requirements established in section 7 and, therefore, are not considered cumulative in the proposed action.

Because most of Campaign Creek is located on the Tonto National Forest, few cumulative impacts from future State, local government, or private activities are expected. Private

actions which are expected and which would be cumulative to the proposed action include additional unauthorized introductions of fish and other aquatic species into Campaign Creek and future private repair actions to the road. We believe these actions are reasonably certain to occur because they have occurred in the past and because such activities are difficult for the responsible State and Federal regulatory agencies to prevent or to take law enforcement action against. Additional unauthorized introductions of other aquatic species and private road work will continue to adversely affect the Gila topminnow exacerbating the adverse effects of any Federal actions.

INCIDENTAL TAKE

Section 9 of the Act, as amended, prohibits any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or attempt to engage in any such conduct) of listed species of fish and wildlife without a special exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered a prohibited taking provided that such taking is in compliance with the incidental take statement. **The measures described below are nondiscretionary, and must be undertaken by the agency or made a binding condition of any grant or permit issued to the applicant, as appropriate.**

The Service anticipates that the proposed repair of FR 449A will result in incidental take of Gila topminnow through direct mortality or through habitat loss or alteration. Gila topminnow present at the ford crossings may be crushed or stranded during heavy equipment operation or poisoned by accidental introduction of toxic substances. Although the present population of Gila topminnow appears to be much smaller than the available habitat, this may not be the case during all repairs taken during the 5 year time-frame of this consultation. During years of large populations, alteration of habitat at ford crossings may reduce its value as Gila topminnow habitat.

Because population estimates of Gila topminnow are not obtainable due to sampling difficulties and would be of little value due to the rapid population changes inherent in a short-lived, highly fecund species such as this, incidental take due to direct mortality cannot be quantified. However, if during project activities more than 20 dead fish, of any species, are found in the project area or within 500 yards downstream of any project work, the anticipated level of incidental take will be considered to have been exceeded.

The extent of incidental take of Gila topminnow habitat is anticipated as up to all of the suitable habitat for 10 feet on either side of the centerline of the ford crossing. For the 6 crossings the total habitat loss anticipated is 120 linear feet of stream.

If, during the course of the action, the amount or extent of the incidental take limit, as defined above, is exceeded, the Forest Service must reinitiate consultation with the Service immediately to avoid violation of section 9. Operations must be stopped in the interim period between the initiation and completion of the new consultation if it is determined that the impact of the additional taking will cause an irreversible and adverse impact on the species. An explanation of the causes of the taking should be provided.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the incidental taking authorized by this biological opinion.

1. Conduct all proposed actions in manner which will minimize direct mortality of Gila topminnow.

2. Conduct all proposed actions in a manner which will minimize loss and alteration of Gila topminnow habitat.

3. Monitor Gila topminnow and their habitat to document levels of incidental take of fish and their habitat.

4. Maintain a complete and accurate record of actions which may result in take of Gila topminnow and their habitat.

5. Take actions to offset the incidental loss of Gila topminnow.

Terms and Conditions for Implementation

In order to be exempt from the prohibitions of section 9 of the Act, the Forest Service is responsible for compliance with the following terms and conditions which implement the reasonable and prudent measures described above.

1. The following terms and conditions will implement reasonable and prudent measure 1.

   1.1 All reasonable efforts shall be made to minimize activities within the wetted stream channel of Campaign Creek.

   1.2 All reasonable efforts shall be made to ensure that no pollutants enter surface waters during action implementation.

2. The following terms and conditions will implement reasonable and prudent measure 2.

   2.1 Channel and riparian vegetation alteration and use of heavy equipment within the Campaign Creek floodplain shall be limited to the existing roadway.

   2.2 No heavy equipment shall enter Campaign Creek except at the 6 existing ford crossings where equipment use shall be restricted to a 20-foot wide roadbed (10 feet on either side of road center).

3. The following term and condition will implement reasonable and prudent measure 3.

   3.1 At any time when project activities are ongoing in or within 100 yards of Campaign Creek, all reasonable efforts shall be maintained to monitor for the presence of dead or dying fish in or within 500 yards downstream of the action area.

4. The following term and condition will implement reasonable and prudent measure 4.

   4.1 Following completion of any road repair work on Campaign Creek a written account of the work and a report of any dead or dying fish or other unusual occurrences shall be submitted to the Service within 60 days.

5. The following term and condition will implement reasonable and prudent measure 5.

   5.1 The Forest Service shall provide the necessary authorizations for, and assist the Service and AGFD in, augmentation stocking of Gila topminnow in Campaign Creek.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. The term conservation recommendations has been defined as Service suggestions regarding **discretionary agency activities** to minimize or avoid adverse effects of a proposed action on listed species or critical habitat or regarding the development of information. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibility for these species.

The Service recommends that the Forest Service discuss the issue of unauthorized road repair with Peter Busnack (also known as Peter Bigfoot) of Reevis Mountain School. Mr. Busnack's construction of a concrete barrier on Tonto National Forest land on Campaign Creek as part of his private road maintenance activities may result in a violation of section 9 of the Endangered Species Act. We assume the private road work may also violate several other Federal statutes and Forest Service regulations. If the Forest Service believes it would be helpful, the Service would be willing to participate in that discussion.

In order for the Service to be kept informed of actions that either minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

CONCLUSION

This concludes formal consultation on the actions outlined in the repair of FR 449A. As required by 50 CFR 402.16, reinitiation of formal consultation is required if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may impact listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

If we can be of further assistance, please contact Sally Stefferud or Tom Gatz.

Sincerely,

Frank M. Bacom

for Sam F. Spiller
State Supervisor

cc: Director, Arizona Game and Fish Department, Phoenix, AZ
Regional Director, Fish and Wildlife Service, Albuquerque, NM (AES)
Director, Fish and Wildlife Service, Washington, D.C. (DES)
Forest Supervisor, Tonto National Forest, Phoenix, AZ
District Ranger, Tonto National Forest, Roosevelt, AZ

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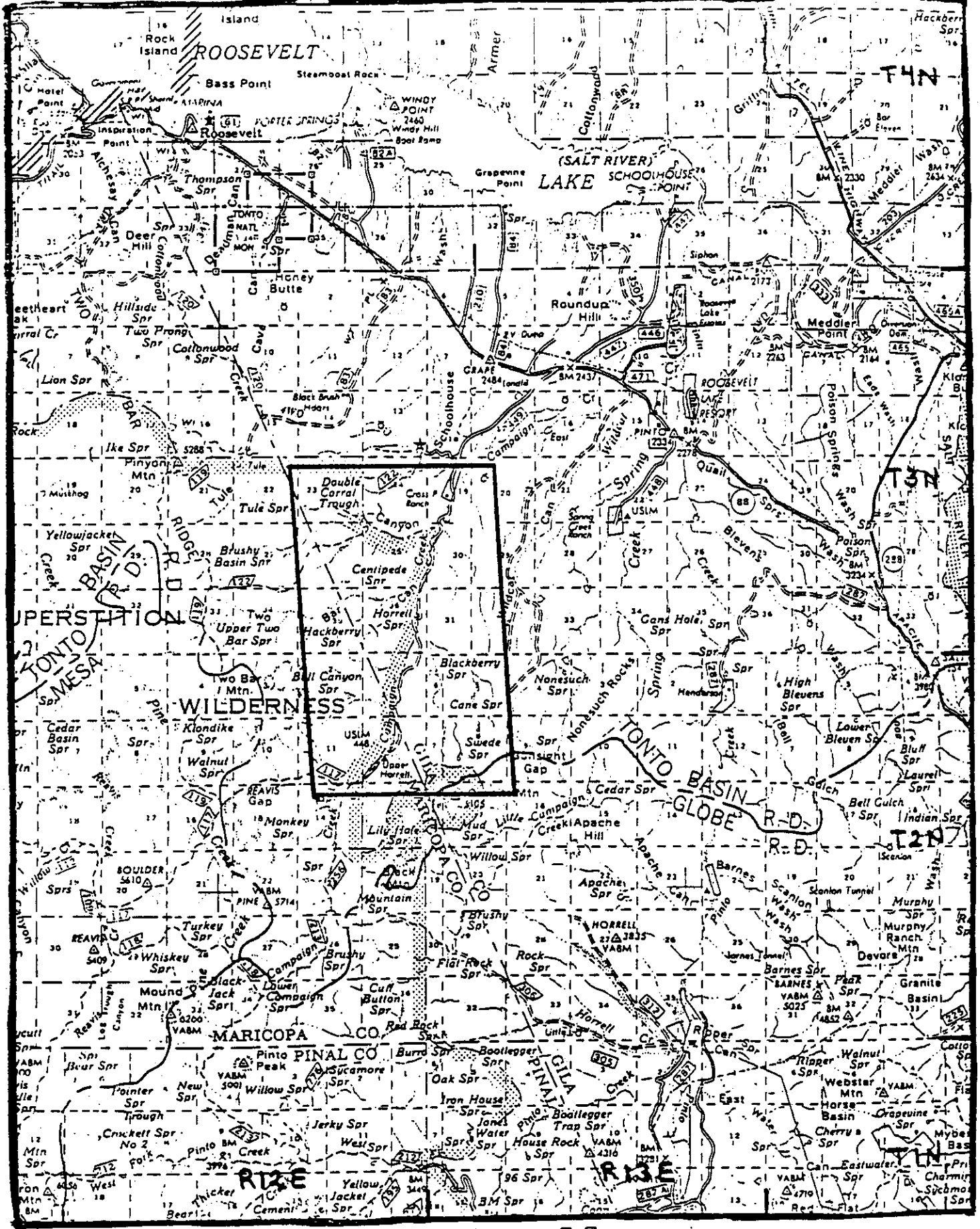

FIGURE 1. (Taken from USFS Dec. 13, 1993 Biological Assessment and Evaluation)

FIGURE 2. (Taken from USFS Dec. 13, 1993 Biological Assessment and Evaluation)